

Serial No. 09/595,038
Response dated November 12, 2004
Reply to Office Action of August 12, 2004

Docket No. 4072-4001

IN THE CLAIMS

Please **Cancel** claim 21 without prejudice or disclaimer.

Please **Amend** claims 23 and 24 to read as follows:

1. (Previously Presented) A fluid conveying tube for vehicle coolers, which on its interior comprises:

first and second opposing longitudinal primary heat-exchange surfaces, said surfaces having flow-directing surface structures;

each surface structure extending laterally across said primary surfaces, each surface structure comprising at least one row of elongate directing elements, said elongate directing elements being arranged obliquely with respect to the longitudinal direction of the primary surfaces, said elongate directing elements in each row being mutually parallel;

said surface structures being alternately arranged in the longitudinal direction on the first and second primary surfaces, the directing elements in each laterally extending row of each surface structure being substantially parallel to the directing elements in the succeeding row of the succeeding surface structure on the opposing primary surface in the longitudinal direction of the tube;

said surface structure further comprising a laterally extending second row of mutually parallel directing elements, the directing elements of the second row being arranged at an angle (γ) relative to the directing elements of the first row;

wherein for a plurality of the mutually parallel directing elements in at least one of the first row and the second row, a corresponding plurality of lines tangent to

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corresponding elongated edges of each of the plurality of mutually parallel directing elements intersect a tip of a corresponding directing element in the other of the first and second rows.

2. (Original) A fluid conveying tube as claimed in claim 1, wherein at least one end of each directing element in said surface structure is arranged, seen in the longitudinal direction of the primary surfaces, essentially in alignment with one end of another directing element in said surface structure.

3. (Canceled)

4. (Previously Presented) The fluid conveying tube as claimed in claim 1, wherein at least one end of each directing element of the first row is arranged, seen in the longitudinal direction of the primary surfaces, essentially in alignment with one end of an associated directing element of the second row.

5. (Previously Presented) The fluid conveying tube as claimed in claim 1, wherein the directing elements are laterally relatively offset in the first and second rows.

6. (Canceled)

7. (Previously Presented) A fluid conveying tube as claimed in claim 1, wherein said angle (γ) is about 20-100.

8. (Canceled)

9. (Previously Presented) A fluid conveying tube as claimed in claim 1, which is designed to be passed by a liquid, wherein the center-to-center distance between directing elements succeeding in said longitudinal direction is about 10-40 times as large as the height of the directing elements perpendicularly to the primary surfaces.

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10. (Previously Presented) A fluid conveying tube as claimed in claim 1, which is designed to be passed by a gas, wherein the center-to-center distance between directing elements succeeding in said longitudinal direction is about 25-65 times as large as the height of the directing elements perpendicularly to the primary surfaces.

11. (Original) A fluid conveying tube as claimed in claim 1, wherein each elongate directing element has a length which is about 4-14 times as large as its height perpendicularly to said primary surface.

12. (Original) A fluid conveying tube as claimed in claim 1, wherein the distance between said primary surfaces is at least about 2.5 times as large as the height of the directing elements perpendicularly to said primary surfaces.

13. (Original) A fluid conveying tube as claimed in claim 1, wherein said surface structures are arranged and designed to form a number of parallel flow paths which extend through the tube and in each of which a swirling motion about a respective axis extending in said longitudinal direction is imparted to a fluid flowing through the tube.

14. (Previously Presented) A vehicle cooler comprising a heat exchanger assembly and at least one tank connected to the heat exchanger assembly, wherein the heat exchanger assembly comprises fluid conveying tubes according to claim 1 and surface enlarging means arranged between the tubes.

15. (Previously Presented) A fluid conveying tube as claimed in claim 1, wherein said angle (γ) is about 30-90.

16. (Previously Presented) A fluid conveying tube as claimed in claim 1, wherein said angle (γ) is about 90.

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17. (Previously Presented) The fluid conveying tube as claimed in claim 1, which is designed to be passed by a liquid, wherein the center-to-center distance between directing elements succeeding in said longitudinal direction is about 15-35 times as large as the height of the directing elements perpendicularly to the primary surfaces.

18. (Previously Presented) A fluid conveying tube as claimed in claim 1, which is designed to be passed by a gas, wherein the center-to-center distance between directing elements succeeding in said longitudinal direction is about 30-55 times as large as the height of the directing elements perpendicularly to the primary surfaces.

19.-21. (Canceled)

22. (Previously Presented) A method of effecting heat transfer in a heat exchanger, comprising:

introducing a plurality of partial flows into a heat exchanger tube with first and second opposing longitudinal primary heat-exchange surfaces, the tube defining a longitudinal axis and

imparting to each of said partial flows a swirling motion about the longitudinal axis through elongated directing elements situated on said first and second heat-exchange surfaces in a first row and a second row substantially parallel, wherein for a plurality of the mutually parallel directing elements in at least one of the first row and the second row, a corresponding plurality of lines tangent to the corresponding elongated edges of each of the plurality of mutually parallel directing elements intersects a tip of a directing element in the other of the first and second rows.

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23. (Currently Amended) The fluid conveying tube for vehicle coolers in claim 1, wherein:

lines tangent to respective elongated edges of each of the mutually parallel directing elements in said one of the first and second rows intersect respective tips of directing elements in the other of the first and second rows.

24. (Currently Amended) The fluid conveying tube for vehicle coolers in claim 1, wherein:

the first row has n mutually parallel directing elements, the second row has $k > n$ mutually parallel directing elements, and [[each]] a corresponding plurality of lines tangent to corresponding elongated edges of the n mutually parallel directing elements in the first row intersects a tip of a respective one of the k mutually parallel directing elements of the second row.

25. (Canceled).

26. (Previously Presented) The fluid conveying tube for vehicle coolers in claim 1, wherein:

the first row has n mutually parallel directing elements, the second row has $k > n$ mutually parallel directing elements, and a respective line tangent to each of the n mutually parallel directing elements in the first row intersects a tip of a respective one of the k mutually parallel directing elements of the second row, and a respective line tangent to n of the k mutually parallel directing elements in the second row intersects a respective one of the n mutually parallel directing elements in the first row.